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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,570	12/14/2001	Merlin E. Scharfe	D/97244	5988

7590 05/10/2005

RICHARD M. KLEIN
FAY, SHARPE, FAGAN, MINNICH & MCKEE, LLP
1100 SUPERIOR AVENUE
SEVENTH FLOOR
CLEVELAND,, OH 44114-2579

EXAMINER	
DOTE, JANIS L	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.**	**Applicant(s)**
	10/014,570	SCHARFE ET AL.
	Examiner	**Art Unit**
	Janis L. Dote	1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-10,12-18,20,21 and 23-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-10,12-18,20,21 and 23-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The finality of the rejection of the last office action mailed on Oct. 25, 2004, is withdrawn.

The indicated allowability of claim 10 is withdrawn in view of the newly discovered reference(s) to US 5,641,599 (Markovics). Rejections based on the newly cited reference(s) follow.

2. The amendment filed on Apr. 8, 2005, after the final office action mailed on Oct. 25, 2004, has been entered. The examiner acknowledges the cancellation of claims 1, 4, 5, 11, 19, 22, 28, and 29, and the amendments to claims 6-8, 12, 13, 15-17, 20, 21, and 23-26, set forth in the amendment filed on Apr. 8, 2005. Claims 6-10, 12-18, 20, 21, and 23-26 are pending.

3. The objections to the specification under 35 U.S.C. 132, set forth in the office action mailed on Oct. 25, 2004, paragraph 4, items (1) and (2), have been withdrawn in response to the amended paragraphs filed on Apr. 8, 2005, beginning at page 6, line 4, of the specification.

The objections to the specification set forth in the office action mailed on Oct. 25, 2004, paragraph 5, items (1) and (3), have been withdrawn in response to the amended paragraphs filed

on Apr. 8, 2005, beginning at page 6, line 4, of the specification.

The objection to the specification set forth in the office action mailed on Oct. 25, 2004, paragraph 6, has been withdrawn in response to the amended paragraphs filed on Apr. 8, 2005, beginning at page 8, line 14, of the specification.

The rejection of claims 22 and 23 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Oct. 25, 2004, paragraph 8, has been withdrawn in response to the amendment to claim 23 and the cancellation of claim 22 set forth in the amendment filed on Apr. 8, 2005.

The rejection of claim 19 under 35 U.S.C. 112, first paragraph, set forth in the office action mailed on Oct. 25, 2004, paragraph 10, has been mooted by the cancellation of claim 19 set forth in the amendment filed on Apr. 8, 2005.

The rejections of claims 11, 28, and 29 under 35 U.S.C. 112, first paragraph, set forth in the office action mailed on Oct. 25, 2004, paragraph 11, have been mooted by the cancellation of claims 11, 28, and 29 set forth in the amendment filed on Apr. 8, 2005.

The rejections under 35 U.S.C. 103(a) of claims 1, 2, 4-9, 12-16, 20-24, and 26 over US 5,871,877 (Ong'877) combined with the other cited references set forth in the office action mailed

on Oct. 25, 2004, paragraphs 21 and 22, have been withdrawn in response to the cancellation of claim 1 and the amendment to claim 10 set forth in the amendment filed on Apr. 4, 2005, where the hole blocking layer comprises a crosslinked polysiloxane polymer network impregnated with a hydroxy-functionalized polymer and photogenerating pigments. As discussed in the office action mailed on Oct. 25, 2004, paragraph 21, Ong'877 teaches a hole-blocking layer comprising a crosslinked polysiloxane polymer network. However, Ong'877 does not teach or suggest that the crosslinked polysiloxane network comprises the hydroxy-functionalized polymer recited in instant claim 10. Nor does Ong'877 and the other cited references teach the presence of a "photogenerating pigment" in the hole blocking layer.

4. The disclosure is objected to because of the following informalities:

In the only example in the specification, the hole blocking layer is said to comprise a polymer of Formula (III). See the specification, page 18, line 26, to page 19, line 1. The amended paragraph beginning at page 3, line 21, of the specification, filed on Aug. 14, 2003, discloses that the polymer represented by Formula (III) is obtained by reacting a

polymer of Formula (I) with an organosilane of Formula (II). However, in the example, the hole blocking layer is obtained from a solution comprising 3-aminopropyl-trimethoxysilane. There is no disclosure of reacting the silane compound with a polymer of Formula (I). Thus, it is not clear how the blocking layer in the example comprises a polymer of Formula (III).

Appropriate correction is required.

Applicants' arguments filed on Apr. 20, 2004, and on Dec. 27, 2004, have been fully considered but they are not persuasive. (Applicants did not address the objection in the reply filed on Apr. 8, 2005.)

Applicants' comments about enablement do not address the objection. The objection is that the description of making the hole blocking layer in the example is incomplete. The example does not disclose how a polymer of Formula (III) disclosed on page 4 of the originally filed specification is obtained by merely heating a solution containing only 3-aminopropyl-trimethoxysilane. Furthermore, it is not clear what is being exemplified because formula (I) at page 4 of the specification encompasses numerous polymers. Clarification is requested.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The examiner notes that US 6,287,737 B1 (Ong'737) was published on Sep. 11, 2001, prior to the instant application's filing date of Dec. 14, 2001. Because Ong'737 qualifies as a reference under a 35 U.S.C. 102(a), as well as 102(e), it is available under 35 U.S.C. 103(a) and 103(c). Rejections over Ong'737 are set forth infra.

7. Claims 7-10, 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,600,673 (Hendrickson) combined with (1) US 6,210,767 B1 (Knauf), (2) Grant & Hackh's Chemical Dictionary, fifth edition, pp. 293, 503, and 531 (Grant & Hackh's I), (3) Borsenberger et al., Organic Photoreceptors for Imaging Systems, pp. 289-292 (Borsenberger), (4) US 6,287,737 B1 (Ong'737), and (5) US 5,641,599 (Markovics).

Hendrickson discloses a photoconductive imaging member that meets the compositional limitations recited in the instant claims, but for the presence of a hole blocking layer. Hendrickson's imaging member comprises a conductive substrate, such as an aluminized polyester substrate, a photoconductive layer, and a topcoat comprising a cured film-forming silicone polymer. Col. 2, lines 45-48; col. 3, lines 36-58; and example 3 at cols. 10-11. The photoconductive layer may have a bilayer structure comprising a charge generating layer and a

charge transporting layer. Col. 2, lines 62-67. The crosslinked silicone polymer is obtained by curing (i.e., crosslinking) the material marked or associated with the trademark SYL-OFF 23, which is identified as a silanol terminated polydimethylsiloxane within the scope of formula II disclosed at col. 3, lines 40-59. See col. 10, lines 19-20. SYL-OFF 23 is also identified as a curable "silicone rubber" polymer. See Knauf, col. 3, lines 54-56. Hendrickson discloses that its imaging member provides 100% toner image transfer with a resolution in excess of 200 line pairs/mm. Col. 2, lines 16-18, and example 3.

Hendrickson further discloses an imaging process comprising the steps of (1) charging its imaging member and (2) imagewise exposing the charged imaging member to light to dissipate the charge on the areas exposed to light. Col. 1, lines 37-43, and example 3, at col. 10, lines 57-59. Thus, Hendrickson demonstrates that its topcoat comprising the crosslinked silicone rubber marked with SYL-OFF 23 is "substantially transparent to activating radiation" as recited in instant claim 26.

Hendrickson does not disclose that its topcoat is electrically insulating or resilient as recited in instant claims 10 and 26. However, as discussed above, the Hendrickson

topcoat layer comprises the crosslinked silanol terminated polydimethylsiloxane marked with SYL-OFF 23, which is identified as a silicone rubber. The word "resilient" is commonly defined as "elastic, rebounding." The term "silicone rubber" is usually defined as "a silicone that retains its elastic properties between -50 and +291 [sic: no scale is provided]." See Grant & Hackh's Chemical Dictionary, pages 503 and 531. Thus, because a silicone rubber is defined as being elastic, it is reasonable to conclude that Hendrickson's crosslinked silicone rubber is also "resilient." The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Furthermore, Hendrickson's crosslinked silicone rubber does not appear to comprise any groups that would render it electrically conductive. Thus, it is reasonable to presume that Hendrickson's topcoat is also electrically insulating. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Instant claim 24 recites that the crosslinked silicone rubber prior to crosslinking is "dimethyl polysiloxane hydrolyzate." The term "hydrolyzate" is usually applied to a substance that has been obtained by hydrolysis. Hydrolysis is a decomposition reaction caused by water resulting in the formation of a hydroxyl group. See Grant & Hackh's Chemical Dictionary, page 293. Thus, the dimethyl polysiloxane

hydrolyzate recited in instant claim 24 is described in product-by-process format. Neither Hendrickson nor Knauf discloses that SYL-OFF 23 is a dimethylpolysiloxane hydrolyzate. However, as discussed supra, Hendrickson identifies SYL-OFF 23 as a silanol (-SiOH) terminated polydimethylsiloxane. In other words, SYL-OFF 23 has a terminal hydroxyl group. Thus, SYL-OFF 23 appears to be the same or similar to the dimethyl polysiloxane hydrolyzate recited in instant claim 24. The burden is on applicants to prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

As discussed supra, Hendrickson does not disclose that its imaging member comprises a hole blocking layer as recited in the instant claims. However, the use of a blocking layer interposed between the conductive substrate and the photoconductive layer (e.g., the charge transport layer and the charge generation layer) to prevent charge injection is well-known in the art. See Borsenberger, paragraph bridging pages 290 and 291, and Fig. 1.

Ong'737 teaches a hole blocking layer comprising a crosslinked polysiloxane polymer. Col. 29, lines 45-51. The crosslinked polysiloxane polymer is obtained by reacting the polymer IV in example II of Ong'737 with 3-aminopropyl-

trimethoxysilane. The crosslinked polysiloxane polymer taught by Ong'737 forms a network impregnated with hydroxy-containing polymers. See col. 11, lines 1-52. The hole blocking layer has a thickness of about 0.5 to 0.7 µm, which is within the thickness range recited in instant claims 8 and 23. Col. 29, lines 45-51. Ong'737 further discloses that the hole blocking layer may have a thickness of about 0.001 to about 5 µm, preferably from about 0.1 to 5 µm. Col. 8, lines 22-25. The thickness value of "about 0.1 µm" is within the range of about 0.005 to 0.3 µm recited in instant claim 9. According to Ong'737, its hole blocking layer is solvent resistant, which enables the coating of a subsequent photogenerating layer (i.e., a charge generating layer) thereon without structural damage. Col. 2, lines 45-47. Ong'737 shows that its hole blocking layer exhibits effective blockage of charge injection, which significantly lowers the dark decay in imaging members compared to imaging members not comprising its hole blocking layer. See the table at col. 30 and the accompanying text.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Borsenberger and Ong'737, to incorporate the Ong'737 hole blocking layer between the conductive substrate and the photoconductive layer - a bilayer structure comprising a charge generation layer and a

charge transport layer, in the imaging member disclosed by Hendrickson. That person would have had a reasonable expectation of successfully obtaining an electrophotographic imaging member having the benefits disclosed by Ong'737.

Ong'737 does not disclose that its crosslinked polysiloxane polymer in the hole blocking layer is further impregnated with photogenerating pigments as recited in instant claim 10.

However, Markovics teaches that a finely divided organic electron transporting pigment having a "short hole range" can be dispersed in a film forming matrix to form a hole blocking layer. Col. 6, lines 42-45. According to Markovics, such a hole blocking layer comprising said electron transporting pigment suppresses the development of charge deficient spots associated with copy printout defects. Col. 6, lines 30-33. When the Markovics hole blocking layer is used in a negative charging electrophotographic imaging member, i.e., a member comprising a charge generation layer covered with a charge transport layer, the imaging member exhibits low residual voltages when extensively cycled. Col. 6, lines 22-25; example II at col. 14; and Table B at col. 15, example II, and the accompanying text. Markovics discloses that the electron transporting pigment can be benzimidazole perylene. Col. 7, lines 62-65, and example II. Markovics also identifies

benzimidazole perylene as a photoactive pigment (i.e., photogenerating pigment). Col. 10, lines 1-6. Thus, benzimidazole perylene meets the limitation "photogenerating pigment" recited in instant claim 10.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Markovics, to disperse the photogenerating benzimidazole perylene pigment in the hole blocking layer of the imaging member rendered obvious over the combined teachings of Hendrickson and Ong'737. That person would have had a reasonable expectation of obtaining an electrophotographic imaging member that suppresses the development of charge deficient spots associated with copy printout defects, and that exhibits low residual voltages when extensively cycled as disclosed by Markovics.

8. Claims 6-10, 12-16, 20, 21, 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ong'737 combined with (1) Markovics, (2) US 5,124,220 (Brown), (3) Hendrickson, (4) Knauf, and (5) Grant & Hackh's I.

Ong'737 discloses a photoconductive imaging member comprising in order, (1) a conductive substrate, (2) a hole blocking layer, (3) an adhesion layer, (4) a charge generation

layer, and (5) a charge transport layer. See example IV at cols. 29-30.

(1) The substrate comprises a 75-µm thick titanized MYLAR substrate. Col. 29, line 44. The thickness is within the range of about 75 to about 275 µm recited in instant claim 6. Ong'737 further discloses that the substrate may be flexible, seamless, or rigid, and in the form of a plate, a cylinder, a scroll, or an endless belt, all of which are within the limitations recited in instant claims 6 and 7. See Ong'737, col. 25, line 53, to col. 26, line 13.

(2) The hole blocking layer comprises a crosslinked polysiloxane polymer. The crosslinked polysiloxane polymer is obtained by reacting the polymer IV in example II with 3-aminopropyl-trimethoxysilane. The crosslinked polysiloxane polymer taught by Ong'737 forms a network impregnated with hydroxy-containing polymers. See col. 11, lines 1-52. The hole blocking layer has a thickness of about 0.5 to 0.7 µm, which is within the thickness range recited in instant claims 8 and 23. Col. 29, lines 45-51. Ong'737 further discloses that the hole blocking layer may have a thickness of about 0.001 to about 5 µm, preferably from about 0.1 to 5 µm. Col. 8, lines 22-25. The thickness value of "about 0.1 µm" is within the range of about 0.005 to 0.3 µm recited in instant claim 9.

(3) The adhesive layer has a thickness of 0.05 μm, which is within the range recited in instant claim 12. Col. 29, lines 52-55.

(4) The charge generation layer comprises hydroxygallium phthalocyanine dispersed in a film forming binder, which is within the compositional limitation recited in instant claim 20. The layer has a thickness of 0.2 μm, which is within the range of about 0.2 to 0.7 μm recited in instant claim 21. Col. 29, lines 55-60.

(5) The charge transport layer comprises aryl amine charge transport molecules that are within the compositional limitations of the formula recited in instant claim 14 and that are dispersed in a binder resin. The aryl amine charge transport molecules have a methyl substituent that meets the compositional limitations recited in instant claims 15 and 16, which depend from claim 14. The charge transport layer has a thickness of 25 microns, which is within range of "about 10 micrometers to about 75 micrometers" recited in instant claim 16. Col. 29, lines 60-65. Ong'737 discloses that the binder resin is a highly insulating and transparent resin. Col. 27, lines 40-41 and 54-62.

Ong'737 discloses that its photoconductive imaging member has an excellent photoinduced discharge curve characteristics,

cyclic, and environmental stability, and acceptable charge deficient spot levels arising from dark injection of charge carriers. Col. 4, lines 15-20.

Ong'737 does not disclose that its crosslinked polysiloxane polymer in the hole blocking layer is further impregnated with photogenerating pigments as recited in instant claim 10.

However, Markovics teaches that a finely divided organic electron transporting pigment having a "short hole range" can be dispersed in a film forming matrix to form a hole blocking layer. Markovics discloses that the electron transporting pigment can be benzimidazole perylene, which is also identified by Markovics as a photoactive pigment (i.e., photogenerating pigment). The discussion of Markovics in paragraph 7 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Markovics, to disperse the photogenerating pigment benzimidazole perylene in the hole blocking layer of the imaging member disclosed by Ong'737, because that person would have had a reasonable expectation of obtaining an imaging member that suppresses the development of charge deficient spots associated with copy printout defects, and that exhibits low residual voltages when extensively cycled as disclosed by Markovics.

Ong'737 also does not disclose that its imaging member further comprises an overcoat layer or a crosslinked silicone rubber as recited in instant claims 10 and 26.

Brown discloses a bilayer topcoat for organic photoconductive imaging members. Brown discloses that the bilayer topcoat comprises a polymeric barrier layer and a cross-linked silicone polymeric release layer. Col. 3, lines 60-63. Brown does not limit the type of photoconductive imaging member used. See col. 4, lines 45-47, which discloses that "organic photoconductive materials are well-known in the art, and the present invention is applicable to all such organic photoconductors." The crosslinked silicone polymeric release layer is the crosslinked material marked or associated with the trademark SYL-OFF 23 described in Hendrickson. Col. 6, lines 20-24. The discussion of the Hendrickson release layer in paragraph 7 <u>supra</u> is incorporated herein by reference. (The discussion of the Hendrickson release layer also includes the discussions of Knauf and <u>Grant & Hackh's</u> I, in paragraph 7 above, which are also incorporated herein by reference.) As discussed in paragraph 7 above, the material marked SYL-OFF 23 is identified as a curable silicone rubber, and the releasing layer (or topcoat) comprising the crosslinked SYL-OFF 23 is "substantially transparent to activating radiation." For the

reasons discussed in paragraph 7 above, it is reasonable to conclude that the release layer disclosed by Brown has the properties recited in instant claims 10 and 26, and that SYL-OFF 23 appears to be the same as the product recited in instant claim 24. The burden is on applicants to prove otherwise.

Brown discloses that its bilayer topcoat improves the removal of image toner as well as the excess or residual toner from the surface of the imaging member. Col. 4, lines 14-17. According to Brown, its bilayer topcoat protects the photoconductive imaging member and extends its useful life in imaging processes, in particular, in processes involving liquid toners and thermally assisted toner transfer steps. Col. 1, lines 7-10, and col. 3, lines 64-67. The barrier layer protects the essential properties of both the organic photoconductor layer and the polymer release coating "by preventing or inhibiting the transport of material between these layers both during the manufacture of the photoconductor element and during its use within the electrophotographic process." Col. 4, lines 1-7.

It would have been obvious for a person having ordinary skill in the art to coat the Brown bilayer on the surface of the photoconductive imaging member rendered obvious over the

combined teachings of Ong'737 and Markovics. That person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having the benefits disclosed by Brown.

9. Claims 6-10, 12-16, 20, 21, 23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ong'737 combined with (1) Markovics, (2) US 4,424,267 (Kondo), and (3) Grant & Hackh's Chemical Dictionary, fifth edition, page 503 (Grant & Hackh's II).

Ong'737 combined with Markovics renders obvious a photoconductive imaging member as described in paragraph 8 above, which is incorporated herein by reference.

Ong'737 does not exemplify an imaging member comprising an overcoat layer or a crosslinked silicone rubber as recited in instant claims 10 and 26.

Kondo discloses a two layer topcoat for photoconductive imaging members. Kondo discloses that the photoconductive layer can be coated with a curable rubber layer and an insulating layer on top of the curable rubber layer. Col. 4, lines 10-13. Kondo teaches that the curable rubber may be a curable silicone rubber. Col. 4, line 46. Kondo discloses that the curable rubber used in its curable rubber layer is a rubber which is

cured by energy, such as heat, light, an electron beam and the like. Col. 4, lines 28-30. Kondo discloses that the "curing is caused by the formation of crosslinking and three dimensional chemical structure, and thereby rubber elastic property is decreased." Col. 4, lines 30-33. Thus, Kondo teaches a cross-linked silicone rubber layer, as recited in instant claim 10. According to Kondo, the curable rubber layer improves the adhesion between the photoconductive layer and the insulating layer, which improves the durability of the imaging members to a great extent. Col. 3, lines 37-50; and the table at col. 8 (in particular compare Sample A and comparative Sample B). The table at col. 8 shows that the photoconductive member in Sample A, which comprises the curable rubber layer and the insulating top layer, produced more than 35,000 copies without degrading. However, the table shows that the photoconductive member in Sample B, which only comprises the insulating top layer, produced only 2,000 copies before part of the top layer peeled off.

Kondo discloses that the insulating top layer may have a preferred thickness from 0.1 to 50 micrometers. Col. 5, lines 4-6. Kondo exemplifies an insulating layer comprising a silicone resin having a layer thickness of 10 micrometers, which

is within the range of "about 5 micrometers to about 10 micrometers" recited in instant claim 25. Col. 9, lines 32-35.

Kondo further discloses an imaging process comprising the steps of (1) charging an imaging member comprising the insulating silicone resin layer and (2) imagewise exposing the charged imaging member to light to form an electrostatic latent image. Col. 6, lines 42-49; col. 8, lines 18-22; and Sample (G), col. 9, lines 33-35. Thus, Kondo demonstrates that the insulating silicone resin layer is "substantially transparent to activating radiation" as recited in instant claim 26.

Kondo does not disclose that its insulating silicone resin layer is "electrically insulating" and "resilient" as recited in instant claims 10 and 26. However, Kondo's insulating silicone resin layer does not appear to contain any groups that would render it electrically conductive. In addition, the word "resilient" is commonly defined as "elastic, rebounding." See <u>Grant & Hackh's Chemical Dictionary</u>, page 503. According to Kondo, the insulating layer is formed for "the purpose of protecting the photoconductive layer, improving the mechanical strength of the photosensitive member, and bettering the dark decay characteristics of the member. Col. 1, lines 40-44. Because the Kondo insulating silicone layer does not appear to

comprise any groups that would render it electrically conductive and because it improves the mechanical strength of the photosensitive member, it is reasonable to conclude that Kondo's insulating layer is "electrically insulating" and also "resilient." The burden is on applicants to prove otherwise. Fitzgerald, supra.

It would have been obvious for a person having ordinary skill in the art to form on the surface of the photoconductive imaging member rendered obvious over the combined teachings of Ong'737 and Markovics a crosslinked silicone rubber layer and an insulating silicone resin layer having a thickness of 10 micrometers on the crosslinked silicone rubber layer as taught by Kondo. That person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having improved durability and mechanical strength as taught by Kondo.

10. Claims 6-10, 12-18, 21, 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,316,880 (Pai) combined with (1) Ong'737, (2) Markovics, (3) Brown, (4) Hendrickson, (5) Knauf, and (6) Grant & Hackh's I.

Pai discloses a photoconductive imaging member comprising (1) a conductive substrate, (2) a hole blocking layer, (3) an

adhesion layer, (4) a charge generation layer, and (5) a charge transport layer. See example VII at cols. 24-25.

(1) The conductive substrate comprises a polyethylene terephthalate film coated with a titanium layer. Col. 24, lines 46-49. Pai further discloses that the substrate may be an endless flexible belt, a web, a rigid cylinder, or a sheet, all of which are within the limitations recited in instant claims 6 and 7. See Pai, col. 5, lines 10-13. The flexible belt may have a thickness of about 125 μm, which is within the range recited in instant claim 6. Col. 5, lines 16-17.

(3) The adhesive layer has a thickness of 50 Angstroms (i.e., 0.005 μm), which is within the range recited in instant claim 12. Col. 24, lines 53-55.

(4) The charge generation layer comprises a vanadyl phthalocyanine dispersed in a film forming binder. The layer has a thickness of about 1 μm, which reads on the thickness of "about 0.7 μm" recited in instant claim 21. Col. 24, lines 56-61. Pai also discloses that the charge generation layer may have a preferred thickness of about 0.3 to about 3 μm. Col. 7, lines 58-59. The thickness of about 0.3 μm is within the range of about 0.2 to about 0.7 μm recited in instant claim 21.

(5) The charge transport layer comprises the arylamine charge transport molecules N,N'-diphenyl-N,N'-bis(3-methylphenyl)-(1,1'-biphenyl)-4,4'-diamine, dispersed in a polyethercarbonate charge transport polymer. Col. 24, lines 60-66. The arylamine charge transport component meets the compositional limitations recited in instant claims 13-16. The polyethercarbonate is within the compositional limitations recited in instant claims 17 and 18. The charge transport layer has a thickness of 30 μm, which is within the thickness range recited in instant claim 16.

Pai discloses that its photoconductive imaging member exhibits improved imaging operation during extended image cycling, integrity of layers underlying the charge transport layer, and high charge carrier mobilities. Col. 4, lines 10-27.

Pai does not exemplify a hole blocking layer (2) as recited in instant claim 10. However, Pai discloses that "[a]ny suitable blocking layer capable of forming an electric barrier to holes between the adjacent photoconductive layer and the underlying conductive substrate may be utilized." Col. 5, lines 59-62.

Ong'737 teaches a hole-blocking layer comprising a crosslinked polysiloxane polymer that forms a network impregnated with hydroxy-containing polymers. The discussion of

Ong'737 in paragraph 7 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Ong'737, to incorporate the Ong'737 hole blocking layer as the hole blocking layer in the photoconductive imaging member disclosed by Pai, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic imaging member having the benefits disclosed by Ong'737.

Ong'737 does not disclose that its crosslinked polysiloxane polymer in the hole blocking layer is further impregnated with photogenerating pigments as recited in instant claim 10.

However, Markovics teaches that a finely divided organic electron transporting pigment having a "short hole range" can be dispersed in a film forming matrix to form a hole blocking layer. Markovics discloses that the electron transporting pigment can be benzimidazole perylene, which is also identified by Markovics as a photoactive pigment (i.e., photogenerating pigment). The discussion of Markovics in paragraph 7 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Markovics, to disperse the photogenerating benzimidazole perylene pigment in

the hole blocking layer of the imaging member rendered obvious over the combined teachings of Pai and Ong'737. That person would have had a reasonable expectation of obtaining an electrophotographic imaging member that suppresses the development of charge deficient spots associated with copy printout defects, and that exhibits low residual voltages when extensively cycled as disclosed by Markovics.

Pai does not exemplify an imaging member comprising an overcoat layer or a crosslinked silicone rubber as recited in instant claims 10 and 26. However, Pai discloses that its imaging member may comprise an overcoat layer to improve the resistance to abrasion. Col. 20, lines 54-55. Pai further discloses that the overcoating layer is well-known in the art. Col. 20, lines 58-59.

Brown discloses a bilayer topcoat for organic photoconductive imaging members. The discussion of Brown in paragraph 8, <u>supra</u>, is incorporated herein by reference. (The discussion of the Brown bilayer also includes the discussions of Hendrickson, Knauf, and <u>Grant & Hackh's</u> I in paragraph 8, which are also incorporated herein by reference.)

It would have been obvious for a person having ordinary skill in the art to coat the Brown bilayer on the surface of the photoconductive imaging member rendered obvious over the

combined teachings of Pai, Ong'737, and Markovics, because that person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having the benefits disclosed by Brown.

11. Claims 6-10, 12-18, 21, 23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pai combined with (1) Ong'737, (2) Markovics, (3) Kondo, and (4) Grant & Hackh's II.

Pai combined with Ong'737 and Markovics renders obvious a photoconductive imaging member as described in paragraph 10 above, which is incorporated herein by reference.

Pai does not exemplify an imaging member that comprises an overcoat layer or a crosslinked silicone rubber as recited in instant claims 10 and 26. However, Pai discloses that its imaging member may comprise an overcoat layer to improve the resistance to abrasion. Col. 20, lines 54-55. Pai further discloses that the overcoating layer is well-known in the art. Col. 20, lines 58-59.

Kondo discloses a two layer topcoat for photoconductive imaging members, which comprises a curable rubber layer and an insulating layer on top of the curable rubber layer. The

discussions of Kondo and Grant & Hackh's II in paragraph 9 supra are incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to form on the surface of the photoconductive imaging member rendered obvious over the combined teachings of Pai, Ong'737, and Markovics a crosslinked silicone rubber layer and an insulating silicone resin layer having a thickness of 10 micrometers on the crosslinked silicone rubber layer as taught by Kondo. That person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having improved durability and mechanical strength as taught by Kondo.

12. The examiner has considered applicants' arguments filed in the reply on Dec. 27, 2004, that are relevant to the rejections set forth in paragraphs 7-11 above. However, applicants' arguments are not persuasive for following reasons:

(1) The rejection over Hendrickson set forth in paragraph 7 above. Applicants assert that Hendrickson teaches only one layer, a topcoat layer comprised of a silicone polymer, and "does not teach two separate and distinct layers as the claims require."

However, the instant claims do not recite that the imaging member comprises a separate "cross-linked silicone rubber layer" and a separate "resilient, electrically insulating overcoating layer." Rather, instant claim 10 recites an "imaging member comprising . . . a cross-linked silicone rubber, and a resilient, electrically insulating overcoating layer." Instant claim 10 does not limit the location of the cross-linked silicone rubber. Nor does the instant claim exclude the cross-linked silicone rubber from being a component of the overcoating layer. The originally filed specification at page 6, lines 22-24, discloses that the "cross-linked silicone can be an overcoating layer, substantially transparent to activating radiation, electrically insulating . . ." Applicants cannot argue patentability based on limitations that are not present in the claims. For the reasons discussed in the rejection in paragraph 7, pages 6-9, <u>supra</u>, Hendrickson teaches a topcoat layer comprising a cross-linked silicone rubber that appears to have the properties of the overcoat layer recited in instant claims 10 and 26. Accordingly, for the reasons discussed in the rejection, the Hendrickson cross-linked silicone rubber topcoat layer meets the limitations of the cross-linked silicone rubber and the overcoating layer recited in the instant claims.

(2) With respect to the rejections over Brown set forth in paragraphs 8 and 10 above. Applicants assert that Brown teaches away from the instant claims because Brown states that its "barrier layer lays between the photoconductive layer and the release layer" and that the barrier layer should not be a silicone layer. Applicants assert that the instant claims require that Brown's barrier layer be a cross-linked silicone rubber.

However, Brown does not teach away from the claimed invention. As discussed supra, the instant claims do not recite that the imaging member comprises a separate "cross-linked silicone rubber layer" and a separate "resilient, electrically insulating overcoating layer." Applicants cannot argue patentability based on limitations that are not present in the claims. The instant claims do not exclude the cross-linked silicone rubber from being a component of the overcoating layer. The originally filed specification at page 6, lines 22-24, discloses that the "cross-linked silicone can be an overcoating layer, substantially transparent to activating radiation, electrically insulating . . ." As discussed in the rejections in paragraph 8 and 10, supra, Brown teaches a bilayer topcoat comprising a polymeric barrier layer and a cross-linked silicone rubber release layer. The instant claims do not

exclude Brown's barrier layer. For the reasons discussed in the rejections, the Brown cross-linked silicone rubber layer appears to have the properties of the overcoating layer recited in instant claims 10 and 26. Accordingly, for the reasons discussed in the rejections, the Brown cross-linked silicone rubber release layer meets the limitations of the cross-linked silicone rubber and the overcoating layer recited in the instant claims.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

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Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP ~~1500~~ 1700

JLD
May 5, 2005